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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,280	07/11/2001	Dong-il, Cho	01580	9300

7590 06/18/2003
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Tulsa, OK 74119

EXAMINER

CHAPMAN JR, JOHN E

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,280

Applicant(s)

CHO, DONG-IL

Examiner

John E Chapman

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 13-32 is/are pending in the application.
- 4a) Of the above claim(s) 26-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 13-25 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1 and 13-32 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The corrected or substitute drawings were received on April 16, 2003. These drawings are not acceptable because they fail to include corrected or substitute drawings for Figures 6, 8, 10 and 16, as required by the Draftsperson in the PTO-948 attached to Paper No. 4. In addition, it is not clear whether new Figures 20 and 21 are being proposed, since the figure labels are bracketed, and there is no brief or detailed description provided in the specification.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objections to the drawings will not be held in abeyance.

2. Newly submitted claims 26-31 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 26-31 are directed to a method for fabricating a micro-gyroscope, classified in Class 438, Subclass 50, whereas the invention originally claimed was directed to a micro-gyroscope, classified in Class 73, Subclass 514.02. The apparatus as claimed can be made without "sputtering or evaporating a metal which has poor step coverage on top side and upper sidewall" to form the metal layer.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 26-31 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 13-25 and 32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 1, it is not clear from the disclosure how a polysilicon layer is “partially etched to accomplish the electrical isolation.” Since polysilicon is conductive, it is not clear that partially etching a polysilicon layer would isolate anything. Furthermore, it is not clear how applicant provides electrical isolation. Although the specification describes etching away polysilicon films at the bottom area of a trench in Fig. 6d in order to obtain electrical isolation (page 14, lines 12-15), it is not clear how this provides electrical isolation for any elements. It is not clear what elements of a microgyroscope are illustrated in Fig. 6d, and it is not clear that etching away the polysilicon layer at the bottom area of the trench electrically isolates any elements of the microgyroscope. It appears to be applicant’s intent to electrically isolate a driving spring from a sensing spring in a microgyroscope (page 13, lines 17-19). It is not clear that Fig. 6d illustrates either a driving spring or a sensing spring, and that the etched away areas of the polysilicon layer provide electrical isolation between the driving and sensing springs.

Regarding claim 14, it is not clear whether applicant’s invention is to electrically isolate a driving spring from a sensing spring in a microgyroscope (page 13, lines 17-19), or a driving

electrode from a sensing electrode (original claim 3), or both. It is not clear that Fig. 6d illustrates either a driving electrode or a sensing electrode, and that the etched away areas of the polysilicon layer provide electrical isolation between the driving and sensing electrodes.

5. Claims 1, 13-25 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is not clear what elements in a micro-gyroscope are provided electrical isolation.

Regarding claim 15, it is not clear what structural limitation is being recited. It appears to be drawn to a step of manufacturing and not to a structural limitation.

Regarding claim 16, the recitation of "a decoupled type" is indefinite. The structure which goes to make up "a decoupled type" should be recited. Furthermore, "a decoupled type" appears to be directed to decoupling the driving and sensing modes, not the driving and sensing electrodes. See page 16, last line. Furthermore, it is not evident that the inner mass and outer mass in Fig. 9 require electrical isolation, since they may form a common ground. Note page 20, lines 9-10. Nor is it clear how the trench in Fig. 6d provides electrical isolation between the inner mass and outer mass in Fig. 9. Nor is it clear that the movable electrodes of the driving and sensing combs require electrical isolation, since they may form a common ground. It is clear, however, that the pair of electrodes in each comb, whether driving or sensing, require electrical isolation from each other. However, it is not clear that the pair of electrodes are partially etched

on the boundary between the pair of electrodes. Rather the partial etching appears to take place at the bottom of the trench in Fig. 6d and not at the boundary between the elements at the top of the trench.

Regarding claim 24, 10 what?

Regarding claim 25, it is not clear what is meant by "a good step coverage."

6. Claims 1, 13-17, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Muenzel et al.

Muenzel discloses a micro-gyrometer in Fig. 2, comprising a triple layer 2/3/24, in which polysilicon layer 3 is etched to provide electrical isolation trenches 10.

Regarding claim 17, driving spring 9 and sensing spring 17 are perpendicular to each other.

7. Applicant's arguments filed April 16, 2003 have been fully considered but they are not persuasive.

Applicant states that Fig. 6 is a cross sectional view of the trench in the comb structure of the microstructure depicted in Fig. 9, and the applicant provides a plane view of the comb structure and its cross sectional view in Figs. 20 and 21. However, it is not clear that Fig. 6 is a cross sectional view of the trench in the comb structure of the microstructure depicted in Fig. 9, since the structures 210 and 220 in Fig. 21 are fixed with respect to each other, and the comb structures in Fig. 6 are variable with respect to each other. Note that if there were no relative

motion of the comb elements, the combs would be incapable of driving or sensing motion. Note also that there is no amendment to page 14, line 3, of the specification, as stated in the Remarks on page 17, line 5.

Regarding claim 14, applicant states that electrical isolation is provided between driving spring and the sensing spring, as well as other elements requiring electrical isolation. However, it is not evident that the driving spring and sensing spring in Fig. 9 require electrical isolation, since they may form a common ground. Note page 20, lines 9-10. Nor is it clear how the trench in Fig. 6d provides electrical isolation between the driving spring and sensing spring in Fig. 9. Nor is it clear that the movable electrodes of the driving and sensing combs require electrical isolation, since they may form a common ground. It is clear, however, that the pair of electrodes in each comb, whether driving or sensing, require electrical isolation from each other.

Applicant argues that in the present invention, polysilicon is deposited on the sidewalls and bottom of the trenches. Such argument, however, is more specific than the invention claimed, since the claims do not polysilicon deposited on the sidewalls and bottom of trenches.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

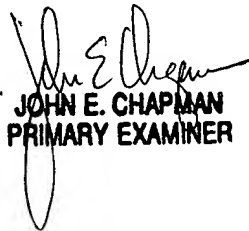
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. This application contains claims 26-31 drawn to an invention nonelected by original presentation. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144). See MPEP § 821.01.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Chapman whose telephone number is (703) 305-4920.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.


JOHN E. CHAPMAN
PRIMARY EXAMINER

jec
June 16, 2003